

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

FUNDA et al

Atty. Ref.: 4662-524; Confirmation No. 5611

Appl. No. 10/530,167

TC/A.U. 1657

Filed: September 13, 2005

Examiner: Hobbs

For: MODIFIED LUPIN PROTEINS FOR PREPARATION OF WATER DISPERSIBLE
PRODUCT FORMS OF FAT SOLUBLE COMPOUNDS

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

DECLARATION UNDER 37 CFR §1.132

I, Elger FUNDA, hereby declare as follows:

1. That I am one of the inventors of the subject application, a citizen of Germany, and my address is as stated in my Declaration under Rule 63 (37 CFR §1.63) of record in the subject application.
2. That I am employed by DSM Nutritional Products Ltd. and have assigned my rights in the subject application to DSM IP Assets B.V.
3. That attached hereto is my curriculum vitae.
4. That the following experiments were conducted by me or under my supervision:

The following formulations were prepared:

- (i) native lupin protein isolate (prior art)
- (ii) Lupin protein with a degree of hydrolysis of 1 % (the present application)
- (iii) Lupin protein with a degree of hydrolysis of around 100% (prior art)

The lupin compounds were used to formulate vitamin A (the formulation was analogous to that of example 3 of 10/530,167. Afterwards the stability of each formulation was tested (at 40°C, open storage). The following table shows the results obtained:

Stability [%]	Lupin isolate Native (non hydrolysed)	Lupin protein hydrolysed (DH = 1 %)	Lupin protein hydrolysed (fully hydrolysed)
initial	100	100	100
after 2 weeks	76.4	83.4	61.3
after 4 weeks	77.8	79.3	54.1
after 8 weeks	48.7	73.3	47.6


From the above it can be seen that the lupin proteins with a DH as claimed in the subject application has improved properties relating to the storage stability.

Additionally, other plant proteins, namely soy rape seed and rice protein were tested. None of these proteins (with similar DH) shows the same stability rate as lupin. The results of the same stability tests are summarized in the following table.

Stability [%]	Soy protein (DH= 1)	Rape seed protein (DH = 1 %)	Rice protein (DH =1)
initial	100	100	100
after 2 weeks	91.6	71.5	67.4
after 4 weeks	80.2	67.0	62.1
after 8 weeks	46.4	59.8	57.4

Based upon the above studies as well as my experience in the field of protein hydrolysis and formulation of vitamins and carotenoids it is my opinion that partially hydrolysed lupin protein shows better stabilisation of vitamin A in beadlet formulations than other comparable plant proteins. Although amino acid composition may be similar, differences in amino acid sequence or tertiary structure of the proteins may cause this increase of stabilising properties. Correct choice of the degree of hydrolysis is important since this has an impact on emulsifying properties of the hydrolysate.

5. I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.


 Elger FUNDA

Date: ___Dec 21st 2010_____

EXHIBIT 1

Curriculum vitae

Name: Elger Manuel Funda
Birthplace: Stuttgart (Germany)
Date of birth: 5th November 1966
Nationality: German

Degrees

Abitur, Ludwigsburg (Germany), 1985
Diploma in Chemistry, University of Stuttgart (Germany), 1994
PhD in Chemistry, University of Stuttgart (Germany), 1998, magna cum laude

Professional experience

1998-2001 Scientist at Fraunhofer Institute for Process Engineering and Packaging,
Freising (Germany)
2001- Formulation Scientist at DSM Nutritional Products / Roche Vitamins,
Basel/Kaiseraugst (Switzerland)

Major research interests

Formulation and encapsulation of active ingredients for food-, feed- and pharma-applications.
Formulation and encapsulation technologies.
Raw materials for formulations.
Enzymatic hydrolysis and crosslinking of proteins for improvement of techno-functional properties

Professional Organizations

Gesellschaft Deutscher Chemiker